WOR-WIC
COMMUNITY COLLEGE

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November 22, 2021

Dr. James D. Fielder
Secretary
Maryland Higher Education Commission
6 North Liberty Street
Baltimore, MD 21201

Dear Dr. Fielder:

Please accept this letter requesting the approval of the Heating, Air Conditioning and Refrigeration Technology certificate at Wor-Wic Community College. The Heating, Air Conditioning and Refrigeration Technology certificate has been recommended through the college curriculum committee and approved by the president and Board of Trustees.

Check #0256091 has been mailed with a letter and summary of the changes requested for Wor-Wic Community College. This letter, corresponding coversheet and new certificate proposal are being sent electronically.

Please contact me should you have any questions and/or need further information. Thank you for your time and consideration.

Sincerely,

Kristin L. Mallory, Ed.D.
Vice President for Academic Affairs

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Cover Sheet for In-State Institutions
New Program or Substantial Modification to Existing Program

Institution Submitting Proposal	Wor-Wic Community College

Each action below requires a separate proposal and cover sheet.

- ○ New Academic Program
- ○ New Area of Concentration
- ○ New Degree Level Approval
- ◉ New Stand-Alone Certificate
- ○ Off Campus Program
- ○ Substantial Change to a Degree Program
- ○ Substantial Change to an Area of Concentration
- ○ Substantial Change to a Certificate Program
- ○ Cooperative Degree Program
- ○ Offer Program at Regional Higher Education Center

Payment Submitted: ◉ Yes ○ No
Payment Type: ○ R*STARS ◉ Check
Payment Amount: $850
Date Submitted: 11/19/202

Department Proposing Program	Technology	
Degree Level and Degree Type	Certificate	
Title of Proposed Program	Heating, Air Conditioning and Refrigeration Technology	
Total Number of Credits	39	
Suggested Codes	HEGIS:	CIP: 47.0201
Program Modality	◉ On-campus	○ Distance Education (*fully online*)
Program Resources	○ Using Existing Resources	◉ Requiring New Resources
Projected Implementation Date	○ Fall ◉ Spring ○ Summer	Year: 2023
Provide Link to Most Recent Academic Catalog	URL: catalog.worwic.edu	
Preferred Contact for this Proposal	Name: Dr. Kristin L. Mallory	
	Title: Vice President for Academic Affairs	
	Phone: (410) 334-2813	
	Email: kmallory@worwic.edu	
President/Chief Executive	Type Name: Dr. Murray K. Hoy	
	Signature:	Date: 11/11/2021
	Date of Approval/Endorsement by Governing Board:	11/11/2021

Revised 1/2021

Maryland Higher Education Commission
ACADEMIC PROGRAM PROPOSAL
Heating, Air Conditioning and Refrigeration Technology Certificate
Wor-Wic Community College

A. Centrality to Institutional Mission Statement and Planning Priorities

A.1. Description of program:

Wor-Wic Community College is applying to add a standalone Heating, Air Conditioning and Refrigeration Technology certificate program. The certificate will prepare students with the skills and knowledge for entry level heating, ventilation, air conditioning and refrigeration (HVAC-R) apprenticeship positions to serve a variety of industries and businesses throughout the Lower Eastern Shore region where HVAC-R skills are used. Industries and businesses on the Lower Eastern Shore who employ HVAC-R technicians provide installation, maintenance and repairs services to residential and commercial customers throughout the Lower Eastern Shore. Wor-Wic Community College's tri-county service area on the Lower Eastern Shore region spans 40 miles from the Nanticoke River and Chesapeake Bay to the Atlantic Ocean. The service area includes the Atlantic Ocean coastal tourism industry along the barrier island from the Delaware/Maryland state board to Ocean City, MD, and mainland communities along the Assawoman Bay, Isle of Wright Bay, and Sinepuxent Bay which have a significant number of seasonal rental properties and retirement communities. The certificate program will prepare students with the training and education for HVAC-R apprenticeship positions that lead to MD State Licensing as HVAC-R journeymen and advanced state licensing as limited licensed, master restricted licensed and master licensed technicians. Courses within the Heating, Air Conditioning and Refrigeration Technology certificate program include blueprint and schematics reading to aid students when installing or maintaining HVAC-R systems in residential and commercial buildings as well as interpreting electrical wiring schematics for troubleshooting electrical problems and replacing electric components.

The Heating, Air Conditioning and Refrigeration Technology certificate program is a three semester programs with a total of 39 credit hours.

The proposed Heating, Air Conditioning and Refrigeration Technology certificate program supports Wor-Wic Community College's mission by "enhanc[ing] local economic growth by addressing the educational, training and workforce development needs of the residents of Worcester, Wicomico and Somerset counties." Through offering "high quality, affordable educational offerings and comprehensive support services designed to facilitate student goal completion," Heating, Air Conditioning and Refrigeration Technology certificate program students will gain HVAC-R skills and knowledge at an affordable tuition cost and serve the residents of the college's service area.

A.2. Support of strategic goals:

The proposed certificate directly supports the following strategic priority for the college:

Strategic Priority One: Student Success

Increase student success by delivering relevant courses and programs, providing flexible scheduling and diverse delivery methods, and improving developmental education student outcomes.

The Heating, Air Conditioning and Refrigeration Technology certificate program provides a relevant program to the Wor-Wic Community College service area through enhancing the employable skills of working residents working in businesses and industries on the Lower Eastern Shore who employ HVAC-R technicians.

College goal #1: Provide service area residents with access to quality education and training at a reasonable cost.

Wor-Wic Community College's tuition and fees are affordable and the lowest for colleges within Maryland's tri-county region of the Lower Eastern Shore.

College goal #2: Offer courses and programs to prepare students for entry into the workforce, career advancement, licensure, certification, transfer to four-year colleges and universities, and personal development.

The Heating, Air Conditioning and Refrigeration Technology certificate program will enhance students' entry level skills and increase their competitiveness when seeking employment. The skills and knowledge gained through the HVAC-R courses will enhance students' qualifications for apprenticeship positions and upward mobility within their employers' organizations.

College goal #3: Promote economic development by providing innovative programs and services that address the needs of business, government, nonprofits and other community groups.

The Heating, Air Conditioning and Refrigeration Technology certificate program supports future economic development by preparing students with technical trade skills for successful employment with current and future businesses serving the Lower Eastern Shore.

College goal #5: Partner with local high schools and universities to facilitate seamless transitions through the levels of education.

One or more area career technical education high schools offers career trade programs that either teach HVAC-R skills or offer career technical education programs in which HVAC-R skills will enhance student employability and career success.

A.3. Funding for first five years

To support the Heating, Air Conditioning and Refrigeration Technology certificate program, Wor-Wic Community would hire part-time faculty to teach heating, air conditioning and refrigeration technology and construction technology courses. Grant funding will be sought to pay for or supplement faculty's salary and fringe benefits for the first three years of offering the program in accordance with grant regulations and requirements. The department head would receive additional faculty release time (0.5

credit) for supervising the Heating, Air Conditioning and Refrigeration Technology certificate program. Additional expenses for faculty salaries, professional development, course supplies or equipment will be subsidized by course tuition and fees. Beyond grant funding and tuition and fees, Wor-Wic Community College will provide support through the college's operational budget allocations to the Heating, Air Conditioning and Refrigeration Technology certificate program.

A.4. Institutional Commitment

Heating, Air Conditioning and Refrigeration Technology certificate program will be administered by the Technology Department under the Occupational and Emerging Technologies Division. Under this organizational assignment, the Department Head will provide direct supervision of the program curriculum, courses, part-time faculty selection and evaluation, budget management, program advisory committee, scheduling courses for each semester and faculty teaching assignments. The Technology Department administrative support will also provide support to the Heating, Air Conditioning and Refrigeration Technology certificate program, and a request for an applied technologies lab technician has been submitted through the annual budget review and request process. The applied technologies lab technician would provide technical assistance and oversight of equipment, tools, materials, and supplies to support the program's courses.

Through support of student services departments and the college's marketing department, advertisement of the program, recruiting outreach and advisement, registration for courses and financial aid application assistance will be provided to all students. Through existing relationships with area businesses who employ HVAC-R technicians, career technical and comprehensive high schools and the Lower Shore Workforce Alliance, it is anticipated that the program will experience a waiting list for students. Courses will be scheduled to guide students through the program's required courses to improve student class success and program completion. Enrollment in the program will be limited due to the number of workstations in the HVAC lab and the number of class sections scheduled to use the facilities during the college's operating hours.

B. Critical and Compelling Regional or Statewide Need as Identified in the State Plan

B.1

The City of Salisbury, MD ranked 13th in *US News and World Reports: Fastest-Growing Places in the US in 2020-21*. The Maryland Department of Planning, using projected population data for 2020 which will be updated when the 2020 Census data is processed, forecasts that between 2020-2025 the population will increase in the Wor-Wic Community College tri-county service area by 0.95% (10,850 residents). However, the US Census Bureau is reporting that Wicomico County experienced a 4.9% population increase and Worcester County experienced a 2.0% population increase between 2010 and 2020. This data does not include recent population movements due to events that occurred during the 2020 calendar year resulting in residents relocating from large cities to smaller cities, suburban areas and rural communities.

The job outlook between 2018-2028 per the Maryland Department of Labor for heating, air conditioning, and refrigeration mechanics and installers is expected to increase from 8,389 job positions to 9,288 job positions for an increase of 899 job positions (10.72%).

The job outlook between 2021-2029 per EMSI for heating, air conditioning, and refrigeration mechanics and installers on Maryland's Lower Eastern Shore region, which is Wor-Wic Community College's tri-county service area of Somerset, Wicomico and Worcester counties is expected to increase from 354 job positions to 394 job positions, an increase of 40 job positions (11.3%).

Both Maryland's Department of Labor's and EMSI's labor projections do not include the increased need for heating, air conditioning, and refrigeration mechanics and installers in the Lower Eastern Shore region to support the continued growth of the region with the influx of retirees and relocating residents to coastal communities from the metropolitan areas of Washington D.C., Baltimore, and Philadelphia.

C. Quantifiable and Reliable Evidence and Documentation of Market Supply and Demand in the Region and State

C.1. 1. Employment opportunities

The Heating, Air Conditioning and Refrigeration Technology certificate will prepare students with the skills and knowledge for HVAC-R apprenticeship positions serving a variety of industries and businesses throughout the Lower Eastern Shore region where HVAC-R skills are used.

Industries and businesses on the Lower Eastern Shore who employ heating, air conditioning, and refrigeration technicians provide installation, maintenance and repair services to residential and commercial customers throughout the Lower Eastern Shore. Wor-Wic Community College's tri-county service area on the Lower Eastern Shore region spans 40 miles from the Nanticoke River and Chesapeake Bay to the Atlantic Ocean. The service area includes the Atlantic Ocean coastal tourism industry along the barrier island from the Delaware/Maryland state board to Ocean City, MD, and mainland communities along the Assawoman Bay, Isle of Wright Bay, and Sinepuxent Bay which have a large number of seasonal rental properties and retirement communities.

C.2. Data analysis projecting market demand

Between 2021 to 2029, it is expected that there will be an 11.3% increase in positions across the three counties in Maryland's Lower Eastern Shore region (EMSI, Q3 2021 data).

Currently, more than 44% of all incumbent heating, air conditioning, and refrigeration mechanics and installers workers are 45 years or older (EMSI Q3 2021 data).

The demand for heating, air conditioning, and refrigeration mechanics and installers will increase with regional development to support the continued increase of residents relocating from metropolitan areas within 150 miles of the Lower Eastern Shore and from Northeast mid-Atlantic states.

C.3. Educational and training needs over the next 5 years

Given the number of industries on the Lower Eastern Shore who rely on qualified heating, air conditioning, and refrigeration mechanics and installers and the number of workers who are over the age of 45, there will be an increased need for junior or entry-level workers in this career field to sustain these industries and support the future growth throughout the region from the influx of relocating populations.

C.4. Current and Projected supply of prospective graduates

A credit bearing Heating, Air Conditioning and Refrigeration Technology certificate program does not exist in the Lower Eastern Shore region. It is expected that there will be 5-10 graduates each year. A combination of full-time and part-time enrolled students are expected to pursue training in the HVAC-R trade skill areas. Currently, Wor-Wic Community College offers non-credit training in HVAC-R skills offered by the Continuing Education and Workforce Development division which graduates 20-30 students each year. Each of the CEWD class cohorts begins training with full class enrollment, but the enrollment decreases due to typical educational and training attrition.

D. Reasonableness of Program Duplication

D.1. Similar programs in state or surrounding area:

Within the State of Maryland, there are three colleges that offer academic programs in the HVAC-R trade skill area. None of the three are on Maryland's Eastern Shore:

Community College of Baltimore County	
Advanced HVAC & Energy Technology	Lower Division Certificate
Basic HVAC & Energy Technology	Lower Division Certificate
HVAC & Energy Technology	Associate Degree
Montgomery College-All Campuses	
HVAC Certificate	Lower Division Certificate
Lincoln College of Technology, Columbia, MD	
A/C, Refrigeration & Heating Technology	Lower Division Certificate

D.2. Justification for Proposed Program

The Heating, Air Conditioning and Refrigeration Technology certificate program will provide students with the necessary training and education to be qualified heating, air conditioning, and refrigeration mechanics and installers for apprenticeship positions in pursuit of a State of Maryland HVAC-R license.

Industries and businesses on the Lower Eastern Shore who employ heating, air conditioning, and refrigeration technicians provide installation, maintenance and repair services to residential and commercial customers throughout the Lower Eastern Shore. Wor-Wic Community College's tri-county service area on the Lower Eastern Shore region spans 40 miles from the Nanticoke River and Chesapeake Bay to the Atlantic Ocean. The service area includes the Atlantic Ocean coastal tourism industry along the

barrier island from the Delaware/Maryland state board to Ocean City, MD, and mainland communities along the Assawoman Bay, Isle of Wright Bay, and Sinepuxent Bay which have large seasonal rental properties and retirement communities.

All three CTE high schools in Wor-Wic CC's service area (Somerset County Technical High School, Wicomico County Career Technical High School at Parkside High School and Worcester Technical High School offer HVAC-R programs as a CTE cluster in each of the high school's available programs to students. Articulation agreements for high school students transferring to Wor-Wic Community College will be reviewed during the annual meeting for articulation opportunities with the three county school systems: Somerset County Public Schools, Wicomico County Public Schools and Worcester County Public Schools.

The Heating, Air Conditioning and Refrigeration Technology certificate program will be located in Wor-Wic Community College's new Applied Technologies Building which has completed the pre-construction and design phases with construction beginning in late fall 2021. The facilities allocated for the Heating, Air Conditioning and Refrigeration Technology certificate program is an HVAC lab that will contain training equipment for HVAC-R subjects and concepts. The building is planned to open during the summer of 2023 for fall 2023 instruction.

E. Relevance to High Demand Programs at Historically Black Institutions

The Heating, Air Conditioning and Refrigeration Technology certificate program is not a transfer program where students can transfer and continue their education at an HBCU institution. None of the HBCU's within 200 miles offer a similar program. The certificate program will prepare students for direct employment opportunities. However, through obtaining a stable job with a good salary, graduates may choose to return to college to pursue a Baccalaureate degree at one of the HBCU's within a 200-mile radius of Wor-Wic Community College:

Bowie State University, MD
Coppin State University, MD
Morgan State University, MD
University of Maryland Eastern Shore, MD

F. Relevance to the Identity of Historically Black Institutions

The Heating, Air Conditioning and Refrigeration Technology certificate program will provide opportunities for all students to gain technical skills and knowledge to pursue a Maryland's State License and success careers as a heating, air conditioning and refrigeration technicians. The addition of this program will not impact the Maryland HBCU's.

G. Adequacy of Curriculum Design and Delivery to Related Learning Outcomes

G.1. Describe how the program was established and the faculty who will oversee the program.

Over the past year, Wor-Wic Community College offered heating, air conditioning, and refrigeration mechanics and installers courses through the non-credit Continuing Education and Workforce Development Division. The non-credit courses started in response to requests from area businesses and industries seeking qualified HVAC-R technicians. The response to the non-credit courses in this area have been successful in graduating 20-30 students each year.

Wor-Wic Community College has been approved to construct a new building on the college's campus which will contain training equipment for HVAC-R subjects and concepts. The building is planned to open during the summer of 2023 for fall 2023 instruction.

Heating, Air Conditioning and Refrigeration Technology certificate program will be administered by the Technology Department under the Occupational and Emerging Technologies Division. Under this organizational assignment, the Department Head will provide direct supervision of the program curriculum, courses, part-time faculty selection and evaluation, budget management, program advisory committee, scheduling courses for each semester and faculty teaching assignments. The Technology Department administrative support will also provide support to the Heating, Air Conditioning and Refrigeration Technology certificate program, and a request for an applied technologies lab technician has been submitted through the annual budget review and request process. The applied technologies lab technician would provide technical assistance and oversight of equipment, tools, materials, and supplies to support the program's courses.

G.2. Educational Objectives and Student Learning Outcomes:

Student Learning Outcomes for the Heating, Air Conditioning and Refrigeration Technology certificate are:

1. Demonstrate the operations of refrigeration, air conditioning, heating and heat pump systems.
2. Prepare business documents and technical documents for documenting services performed and customer invoices.
3. Evacuate, charge and recover refrigerant from air conditioning and refrigeration systems.
4. Calculate residential heat loss and heat gain.

G.3. Assessment

a. Student Learning Outcomes

Wor-Wic Community College maintains academic policies and procedures in the college Policies and Procedures Manual (PPM) which are reviewed on a regular basis and revised or updated as needed. In accordance with the PPM, academic programs, courses and faculty are reviewed and assessed annually on the student learning outcomes (SLOs). The standard benchmark for courses is a 70% pass rate for course objectives at the end of semester final exam. In the department heads' annual program reports, plans of action are developed for the upcoming year to address steps of improvement when benchmarks are not met. The plans of action are reviewed, and updates are prepared twice during the upcoming year: 6 months and 1 year. Both the dean for the program's division and the

Vice President for Academic Affairs prepare responses to the department heads' annual reports.

b. Program Learning Outcomes

Wor-Wic Community College has an extensive and thorough assessment plan that is managed by the Director of Institutional Assessment and Effectiveness who has revamped the assessment process since coming to Wor-Wic. Under the Director, all courses and programs have annual reviews validating that General Education objectives and student learning outcomes are met. Annually, department heads prepare reports on the status of the programs within the department, course assessments and assessment results and action plans for the next academic year. All programs are reviewed on a five-year cycle.

G.4. Course list including title, credit hours, and course descriptions:

Heating, Air Conditioning and Refrigeration Technology Certificate

		Credit Hours
Fall Semester		
*HVA 101	Fundamentals of Refrigeration	3
**HVA 120	Air Conditioning Fundamentals	4
*CON 110	Reading Blueprints and Schematics	3
*MTH 102	Mathematical Applications	3
SDV 100	Fundamentals of College Study	1
		14
Spring Semester		
*HVA 110	Introduction to Heating Systems	3
*HVA 123	Introduction to Air Conditioning Systems	4
*HVA 130	Introduction to Refrigeration Systems	4
**HVA 140	Automatic Temperature System Controls	3
*ELE 101	Principles of Electricity	4
		18
Fall Semester		
*HVA 175	EPA Certification Preparation	1
*HVA 210	Heat Pumps	4
*HVA 221	Residential Load Calculations	2
		7
		Total: 39

* This course has a prerequisite.

** This course has a co-requisite.

Construction Technology Courses:

CON 110 - Reading Blueprints and Schematics (3 Credits)

This course is designed to introduce common technical drawing formats used to represent designs and plans for mechanical, construction and electronics applications. Topics include orthographic projection, terminology, dimensioning, symbols, working to scales, schedules, material list and details, pictorial representation and basic parallel projection drafting techniques. Activities require reading and interpreting blueprints commonly used in the mechanical, construction and electronics industries. *Lecture Hours: 39. Prerequisite(s): MTH 091 with a grade of "C" or better or an acceptable mathematics placement test score. Usually offered in the fall.*

Electricity Courses:

ELE 101 – Principles of Electricity (4 Credits)

This course introduces the fundamental concept of electricity, including direct current (DC), voltage, power, resistance, inductance and capacitance. The application of Ohm's law, network analysis and electrical measurement are stressed. Students are introduced to the operation of electric motors. *Lecture Hours: 39. Laboratory Hours: 26. Prerequisite(s): MTH 092 with a grade of "C" or better or an acceptable mathematics placement test score. Usually offered in the spring.*

Heating, Ventilation, Air Conditioning and Refrigeration Technology Courses:

HVA 101 - Fundamentals of Refrigeration (3 Credits)

This course covers the refrigeration cycle, refrigerants, pressure temperature relationship and system components. Students are introduced to refrigeration theory, refrigeration cycles, metering devices, refrigeration components, and service tools and equipment. *Lecture Hours: 26. Laboratory Hours: 39. Prerequisite(s): MTH 092 with a grade of "C" or better or an acceptable mathematics placement test score. Usually offered in the fall.*

HVA 110 – Introduction to Heating Systems (3 Credits)

This course covers the basic concepts, major components and the operation of oil, natural gas and electric heating systems. Students explore servicing, testing and controls for forced air and radiant heating systems. *Lecture Hours: 26. Laboratory Hours: 26. Prerequisite(s): CON 110 and HVA 101. Usually offered in the spring.*

HVA 120 – Air Conditioning Fundamentals (4 Credits)

This course offers an introduction to the principles of air conditioning. Students explore basic heat transfer concepts and fundamentals, cooling fundamentals and human comfort conditions. *Lecture Hours: 26. Laboratory Hours: 39. Corequisite(s): HVA 101. Usually offered in the fall.*

HVA 123 – Introduction to Air Conditioning Systems (4 Credits)

This course is a study of various types of air conditioning equipment, including electrical components, schematics and service to the refrigerant circuit. Students explore residential heating and cooling control systems, service procedures, problem-solving analysis, cooling system applications and the procedures to evaluate the operating conditions of cooling systems. *Lecture Hours: 26. Laboratory Hours: 39. Prerequisite(s): CON 110 and HVA 120. Usually offered in the spring.*

HVA 130 – Introduction to Refrigeration Systems (4 Credits)

This course is a study of refrigeration equipment and systems. Students explore servicing and testing refrigeration equipment and components, troubleshooting heating mechanical system problems, and recovering, recycling and reclaiming methods of refrigerants. *Lecture Hours: 26. Laboratory Hours: 39. Prerequisite(s): HVA 101. Usually offered in the spring.*

HVA 140 – Automatic Temperature System Controls (3 Credits)

This course is a study of the adjustment, repair and maintenance of a variety of pressure and temperature-sensitive automatic controls. Students explore electric testing devices and meters, electric components used in heating and cooling systems, electric circuits and automatic temperature control systems and equipment. *Lecture Hours: 26. Laboratory Hours: 29. Prerequisite(s): CON 110 and HVA 120 - Air Conditioning Fundamentals. Corequisite(s): ELE 101. Usually offered in the spring.*

HVA 175 – EPA Certification Preparation (1 Credit)

This course covers Environmental Protection Agency (EPA) guidelines and procedures required by law for refrigerant recovery and recycling during the installation, service and repair of all HVAC and refrigeration systems. A comprehensive review of essential material in the EPA 608 exam is included. *Lecture Hours: 13. Prerequisite(s): HVA and HVA 130. Usually offered in the fall.*

HVA 210 – Heat Pumps (4 Credits)

This course is a study of the theory and operational principles of heat pumps. Students explore the principles of heat pump systems, heat pump controls and metering devices, and the procedures used to evaluate the operating conditions of heat pump systems. *Lecture Hours: 26. Laboratory Hours: 39. Prerequisite(s): HVA 110 and HVA 120. Usually offered in the fall.*

HVA 221 – Residential Load Calculations (2 Credits)

This course is a study of heat losses and gains in residential structures. Students explore calculating heating and cooling loads and interpreting design data for residential structures. *Lecture Hours: 16. Prerequisite(s): HVA 123 and MTH 102. Usually offered in the fall.*

General Education Courses:

SDV 100 - Fundamentals of College Study (1 Credit)

This course is designed to introduce students to the information and habits that facilitate academic success at the college level. The course presents modules focusing on the expectations and realities of college responsibility, active learning and critical thinking skills, increasing motivation and decreasing stress, analyzing the syllabus, instructor and course, establishing a learning style, organizing and balancing family, work and school, improving study and note-taking skills, and test-taking strategies, advisement, registration and the college catalog, safety, student services and other administrative resources, rules, regulations and civility, and lifelong learning. Students who do not pass this course must take it again the following fall or spring term. *Lecture Hours: 15. Usually offered in the fall, spring and summer.*

MTH 102 - Mathematical Applications (3 Credits)

Students develop the ability to reason with quantitative information through the study of the principles of reasoning, numbering sense, probability and statistical reasoning, and mathematical modeling. This liberal arts course develops mathematical ideas that students encounter in college and career settings. *Lecture Hours: 39. Prerequisite(s): ENG 095 or ENG 097 and MTH 092 with grades of "C" or better or acceptable reading and mathematics placement test scores. Usually offered in the fall and spring.*

G.5. General Education requirements:

Certificate programs do not have a General Education requirement. However, there are two required courses in the Heating, Air Conditioning and Refrigeration Technology certificate program which are General Education courses. One of the two courses is a requirement for all students, but is not in the college's General Education core requirement:

MTH 102 - Mathematical Applications (3 Credits)

SDV 100 - Fundamentals of College Study (1 Credit) [not a General Education core requirement]

G.6. Specialized Accreditation

Though a specialized accreditation will not be pursued for the Heating, Air Conditioning and Refrigeration Technology certificate program, the standards and course outcomes will prepare students for the MD State Licensing exam.

G.7. Contracts with other Institutions

N/A

G.8. Provide assurance and any appropriate evidence that the proposed program will provide students with clear, complete, and timely information on the curriculum, course and degree requirements, nature of faculty/student interaction, assumptions about

technology competence and skills, technical equipment requirements, learning management system, availability of academic support services and financial aid resources, and costs and payment policies.

Wor-Wic Community College documents the curricula requirements for all programs in the annual college catalog. In addition to curricula, the program's learning objectives are also documented in the catalog along with each course description. Consistent with standard college catalog practices, the catalog includes the academic calendar, college admissions process and requirements, tuitions and fee schedule, financial aid and loans process, student advisement and academic standards and processes for student grievance and complaints. Current and past college catalogs are accessible on the Wor-Wic Community College website.

H. Adequacy of Articulation

Wor-Wic Community College has articulation agreements with each of the three county school systems within the college's service area and universities in the region. Articulations with each county school systems are on a course-by-courses basis and are reviewed annually during a joint meeting with faculty from Wor-Wic Community College and faculty from the three county school systems: Somerset County Public Schools, Wicomico County Public Schools and Worcester County Public Schools.

Both Wicomico County Career Technical High School at Parkside High School and Worcester Technical High School offer heating, air conditioning and refrigeration programs as a career technical education cluster in each of the high school's available programs to students. Articulation agreements for high school students transferring to Wor-Wic Community College will be reviewed during the annual meeting for articulation opportunities.

I. Adequacy of Faculty Resources

I.1 Faculty Summary

There are no current full-time faculty at Wor-Wic Community College with the work experience and training required to teach Construction Technology, Electrical Technology and Heating, Ventilation, Air Condition and Refrigeration Technology courses. Part-time faculty will be used to teach courses in these subject areas, and current instructors in the non-credit division who teach these subject areas and meet the requirements to teach college credit courses will be invited to apply for teaching positions.

Faculty Member	Faculty Rank	Degrees	Work Experience	Full or Part-time	Courses Taught
TBD	Instructor	AAS, BS, MS in an Engineering, Engineering Technology, skill trade where architectural drafting, blueprint reading, schematics are used	5+ years' experience in an Engineering, Engineering Technology, skill trade	PT	CON 110

TBD	Instructor	AAS, BS, MS in an Engineering, Engineering Technology, skill trade where electricity, electrical testing, troubleshooting, analysis are used	5+ years' experience in an Engineering, Engineering Technology, skill trade	PT	ELE 101
TBD	Instructor	HVAC Certification, HVAC MD State License, current EPA certification	Master License as an HVAC contractor	PT	HVA courses

I.2. Ongoing pedagogy training for faculty

a. Pedagogy that meets the needs of the students

Annually, Wor-Wic Community College coordinates a professional development day for faculty. Topics scheduled for the professional development day are based around current and relevant teaching topics and best practices. Faculty are encouraged to participate in discipline specific professional development, and eligible faculty have the opportunity to apply for college and grant funds.

b. The learning management system

Wor-Wic Community College adopted Blackboard for the college's learning management system. All faculty are required to use Blackboard class shells for each of their class sections. The shells are prepared through an automated process based on class sections that are scheduled for the semester. Faculty have access to class shells prior to the semester which provides them access to upload class syllabi and configure the online gradebook. Blackboard training and support is provided by the college's Instructional Technologist. The technologist also prepares instructional videos and provides additional instruction during faculty professional development sessions.

c. Evidenced-based best practices for distance education, if distance education is offered.

Wor-Wic Community College is increasing the number of courses which are scheduled using the online modality. Courses are required to be approved for online scheduling by the Distance Education Committee which is comprised of faculty, deans, the Instructional Technologist, and the Instructional Designer. Online courses are evaluated and assessed by using the Quality Matters methodology in which department peers participate in the course review process.

J. Adequacy of Library Resources

Wor-Wic Community College utilizes electronic resources for the college library that are accessible both on and off campus. The Heating, Air Conditioning and Refrigeration Technology certificate program will not require additional library or reference resources.

In addition to the Wor-Wic Community College online library, current students have access to the libraries at Salisbury University and the University of Maryland Eastern Shore campuses. Both libraries are traditional libraries with both electronic and physical resources.

K. Adequacy of Physical Resources, Infrastructure and Instructional Equipment

K.1. Physical facilities, infrastructure, and instructional equipment

Wor-Wic Community College was approved to construct a new building on campus which was named "The Applied Technology Building (ATB)" during the pre-construction and construction phases of the building. When the building is opened for operations, the building name will be changed in honor of a key donor who provided both equipment and student financial support for the programs utilizing the applied technology labs. The building will contain an HVAC lab containing training equipment for HVAC-R subjects and concepts. The building is planned to open during the summer of 2023 for fall 2023 instruction.

Equipment identified for the ATB HVAC lab include:

Refrigeration Trainers
Motors and Controls Trainer
Mechanical training system for basic measurement, mechanical drives and laser alignment
Electrical systems training system for AC/DC electricity applications including motors, industrial systems, VFD/PLC wiring, soldering, electronic sensors, and electro-fluid power
Electrical control systems training system for power and control electronics, PLC troubleshooting, industrial wiring systems, VFD/PLC installation and AC variable frequency drive troubleshooting

K.2. Distance Education Assurances

To support distance education and off-campus access to college and class resources, Wor-Wic Community College students receive log-on access to the college's myWor-Wic portal. The myWor-Wic portal provides access to Blackboard learning management system, an email account, electronic library resources and student registration information. Students who register for online scheduled courses are required to complete a mandatory Blackboard tutorial which includes an assessment prior to accessing course material.

L. Adequacy of Financial Resources.

L.1. Table 1 – Resources and Narrative Rationale

The Heating, Air Conditioning and Refrigeration Technology certificate program will attract more part-time students than full-time students due to eligible students working in their career trade during daytime hours. However, there will be a small number of students who will be able to attend in a full-time capacity while they are attending night-

time training classes for their career trade or whose schedules will allow them to enroll in 12 credits each semester. Future tuition and fees for each year are calculated at the rate of a 3% increase from the previous year's tuition and fees.

TABLE 1: RESOURCES					
Resource Categories	Year 1	Year 2	Year 3	Year 4	Year 5
1. Reallocated funds	0	0	0	0	0
2. Tuition/Fee Revenue (c + g below)	34444	47960	49200	50464	51977.92
a. Number of F/T students	8	8	8	8	8
b. Annual tuition/fee rate	3593	3685	3780	3878	3994.34
c. Total F/T revenue (a * b)	28744	29480	30240	31024	31954.72
d. Number of P/T students	2	5	5	5	5
e. Credit hour rate	150	154	158	162	166.86
f. Annual credit hour	19	24	24	24	24
g. Total P/T revenue (d * e * f)	5700	18480	18960	19440	20023.2
3. Grants, Contracts & other external sources	0	0	0	0	0
4. Other Sources	0	0	0	0	0
TOTAL (Add 1 - 4)	34444	47960	49200	50464	51978.92

L.2. Table 2 – Program Expenditures and Narrative Rationale

The Heating, Air Conditioning and Refrigeration Technology certificate program will rely on part-time faculty for instruction. The department head, department administrative associate and building lab technician will provide oversight and assistance for the Heating, Air Conditioning and Refrigeration Technology Certificate programs along with other applied technology programs offered by the department. These positions will be funded through the college's operational budget. The department head would receive an additional 0.5 workload credit for supervising the new program which is in accordance with the Wor-Wic Community College Policy and Procedures Manual. The equipment costs have been identified through Form G submitted to the state for the new building. Additional funding for equipment may be obtained through the college's foundation.

TABLE 2: EXPENDITURES					
Expenditure Categories	Year 1	Year 2	Year 3	Year 4	Year 5
1. Faculty (b + c below)	31,600.28	32,548.28	33,524.73	34,530.48	35,566.39
a. #FTE	0	0	0	0	0
b. Total salary	29,354.65	30,235.29	31,142.34	32,076.61	33,038.91
c. Total benefits	2,245.63	2,313.00	2,382.39	2,453.86	2,527.48
2. Admin. staff (b + c below)	0	0	0	0	0
a. #FTE	0	0	0	0	0
b. Total salary	0	0	0	0	0

c. Total benefits	0	0	0	0	0
3. Support staff (b + c below)	0	0	0	0	0
a. #FTE	0	0	0	0	0
b. Total salary	0	0	0	0	0
c. Total benefits	0	0	0	0	0
4. Equipment	0	0	0	0	0
5. Library	0	0	0	0	0
6. New or renovated space	0	0	0	0	0
7. Other expenses	0	0	0	0	0
TOTAL (Add 1 - 7)	31,600.28	32,548.28	33,524.73	34,530.48	35,566.39

M. Adequacy of provisions for evaluation of program

M.1. Evaluation Procedures – Courses, Faculty, Student Learning Outcomes

In accordance with the Wor-Wic Community College's PPM, academic programs, courses and faculty are reviewed and assessed annually on the student learning outcomes (SLOs) which result from annual assessment activities. The standard benchmark for courses is a 70% pass rate for course objectives on the end of semester final exam. In the department heads' annual program reports, plans of action are developed for the upcoming year to address steps of improvement when benchmarks are not met. The plans of action are reviewed, and updates are prepared twice during the upcoming year: 6 months and 1 year. Both the dean for the program's division and the Vice President for Academic Affairs prepares responses to the department head's annual reports.

Part-time faculty members are evaluated by the department head and the evaluations include classroom observations as needed, as well as student input. Online surveys requesting the opinions of students are distributed at the end of each semester. The survey results are returned directly to the vice president for academic affairs, who provides each faculty member, the department head and dean with a compilation of the student surveys. Students enrolled in a new part-time faculty member's first semester of teaching received an abbreviated survey at the midterm point of the semester and the survey results are returned directly to the faculty member, who submits a summary of these surveys to the dean and the vice president for academic affairs.

M.2. Evaluation of Proposed Program's Effectiveness

In accordance with Wor-Wic Community College's Assessment policies and procedures, all programs and courses are reviewed annually to validate the status with meeting objectives and outcomes. Department heads prepare annual reports on the successes, challenges and achievements. Programs are also reviewed using a standard program review process every five years.

N. Consistency with the State's Minority Student Achievement Goals

Per Wor-Wic Community College's policies and procedures, the college has a standing Cultural Diversity committee consisting of representation from students, faculty, college

staff and administrators. The committee is responsible for annually reviewing the Cultural Diversity Plan and scheduling events for the college community.

The Cultural Diversity Plan states: "Wor-Wic Community College is committed to a plan of cultural diversity that promotes inclusivity of diverse students and employees. The college has created a welcoming atmosphere on campus and has infused cultural diversity in all college programs, services, and communications. The college has demonstrated this commitment to cultural diversity through its vision, values, mission, and goals stated in the institutional strategic plan. The strategic plan of the college is in alignment with the diversity goals of the Maryland State Plan for Postsecondary Education, including implementation strategies and timelines for meeting the goals.

Wor-Wic's student body represents a wide array of diversity with 40 percent of the students identified as non-white. Wor-Wic exceeds the average of non-white residents in the service region, as 31.8% of the population identify as non-white in this area.

O. Relationship of Low Productivity Programs

N/A

P. Adequacy of Distance Education Programs

The Heating, Air Conditioning and Refrigeration Technology certificate program will benefit from the two General Education courses required in the program which are scheduled in both in-person traditional instruction modality and online instruction modality. Lecture portions of lab courses will be evaluated for online delivery to support scheduling these courses as hybrid instruction modality, and courses that are lecture only courses will be evaluated for online and hybrid instruction modalities. Wor-Wic Community College complies with the Middle States Commission on Higher Education and Maryland Higher Education Commission (MHEC) requirements for offering distance education programs and courses.